



# Reducing risk by learning from nature's resilience

A coastal oriented Policy Brief from the Interreg North Sea Building with Nature project by Danish Coastal Authority, Denmark

## Key messages

- We can reduce risk by learning from nature's resiliens. The Danish legal framework supports the Building with Nature (BwN) concept in terms of a holistic approach, though less reflected in the actual coastal protection schemes.
- The base of experience is to be developed. The uptake of BwN solutions in coastal protection schemes will expected to lead to increased safety, and will deliver multiple benefits for nature and human well-being and improve economically values of the coastal areas.
- A coastal policy based on the BwN concept can substantially be supported by:
  - developing adequate mapping, tools and supportive guidance e.g. how to incorporate (and value) not-quantifiable services/values,
  - developing a number of business cases where nature based solutions are used and e.g. are compared to more traditional and often preferred approaches and

- incorporating a risk based approach to coastal planning and protection.

## Sense of Urgency

The Danish coastline is 7300 km and almost 1 million inhabitants live less than 1000 m from the coast. Many coasts are subject to structural and acute erosion to varying degrees, and low-lying areas and coastal cities are subject to flooding by storm surge. Sea level rise adds to the problems. With sea level rise of up to 1 m over the next 80 years, increasing rainfall and storm surge water levels, the risk of coastal erosion and flooding will increase, and the costs of damages and recovery will increase significantly over time.

If we fail to adapt in time, climate change will inforce major impact on our safety, health, nature, recreation, tourism and many other functions of the coasts and coastal areas.



## A solution: Planning for nature based solutions

The coastal policies in Denmark are diverse and, with few exceptions, overall based on the initiative of municipalities and private landowners. The municipalities are responsible for planning for land use. Furthermore the Coastal protection act provide the municipalities with the option to plan for and establish coastal protection schemes for longer stretches of coasts, and also deciding who is going to finance it, including imposing a payment obligation on the landowners.

The Danish government has made some changes in the coastal and planning regulation the past few years. The municipalities have been given the final authority to give permits for coastal protection in September 2018. These changes aim to support better protection against erosion and flooding from the sea and support a risk management approach to planning in the coastal zone. State initiatives concerning national coastal risk assessment, tools and capacity building targeted the municipalities support these regulations. Comprehensive planning based on valid data and knowledge of the risk of erosion and flooding and the threat of sea level rise in a long-term perspective will support the favor of nature based solutions and lead to more flexible and socio-economical optimal solutions.

State authorities have initiated a number of initiatives to empower the municipalities to support the landowners to manage the risk due to erosion and/or flooding, including education, tools and guidance and planning with focus on risk management. Another initiative is the development of proposal for risk management guidelines for all the coasts of Denmark, targeting the different challenges and potentials now and in the future climate. These guidelines will include proposals for general coastal protection schemes for longer stretches based on a holistic approach, and the municipalities will be encouraged to add local perspectives for the future development.

The proposals will be developed in cooperation with the local municipalities. The guidelines are not regulatory, and will therefore not be obligatory for the municipalities.

The BwN approach will serve as the underlying foundation for the guidelines and proposals, ensuring sustainable solutions and a high probability of permit the coastal protection schemes, if the schemes are going to be implemented. Furthermore, guidelines are developed within the knowledge of how natural coasts have proven resilience under severe storms, and that knowledge has been incorporated into the BwN concept.

## Cost-effective coastal protection

The Danish effort in BwN focuses on WP3 'Resilient Coastal Laboratories' in terms of improving performance of sand nourishments. This is done through analyzes of the natural dynamics and different methods, nationally and internationally. As a Coastal Authority we have decades of experience with sand nourishments, and we have been working together with our coastal neighbors in different projects in the North Sea Region for many years. With improved evidence base, the basis for achieving more cost-effective projects and climate resilient coasts will follow.

The Danish Coastal Authority aims to make knowledge from the project accessible to municipalities, landowners and advisors, e.g. with national guidelines concerning sand nourishment strategies.





## Lessons learned from the Interreg BwN project

### *Different roles and responsibilities*

In most countries, roles and responsibilities are dispersed amongst multiple organizations. In Denmark as well in Sweden the landowners are responsible for protection their own property against erosion and flooding. In Scotland, the responsibility of coastal erosion protection also lies with the landowner.

### *Complex task, multiple stakeholders and organizations*

Reducing risk of erosion and/or flooding is a complex task with interacting planning processes and multiple stakeholders. This calls for cross border collaboration between organizations, on all levels strategic and operational. It takes time. These lessons are recognized amongst the project partners.





## Challenges

- a) *Individual landowner approach.* The view of perspective of an individual landowner and a municipality will by many means be different. This is an important issue how to understand enabling factors and barriers in the management of the Coastal protection act. On one hand access to and use of the (erosion) coasts in Denmark is a major driver in Danish economy. On the other hand an individual landowner is primarily interested in his or her own property at present and safety. Landowners more likely have a relatively short-term perspective compared to the long-term effects of coastal protection, and experience show that landowners often prefer passive coastal protection (grey solutions).
- b) *Incentives for coastal policy and planning.* For more than a decade the municipalities have had the option to plan for and establish coastal protection schemes for longer stretches of coast, and also deciding who is going to finance the coastal protection schemes, including imposing a payment obligation on the landowners. This opportunity are rarely used for establishing nature based coastal protection schemes in Denmark.
- c) *Convincing proof of concept.* There is a need for new concrete showcases to learn from, where the comprehensive planning e.g. barriers and benefits of BwN solutions are dealt with.

## Policy recommendations

- i. *Individual landowner approach.* Encourage a risk based approach for coastal planning and protection in the municipalities and amongst landowners. Build up risk awareness and knowledge involving local communities/citizens.
- ii. *Incentives for coastal policy and planning.* Mainstream climate data and risk management into municipality planning. Developing a national risk assessment and risk management guidelines, tools and guidance targeted the municipalities. Highlight the benefits of establishing coastal protection based on for longer stretches/areas to reduce risk of flooding or erosion. Help identify the barriers and deal with the complexity in planning and executing these projects.
- iii. *Convincing proof of concept.* Build up a number of showcases to learn from. Concrete examples where a policy based on the BwN concept are implemented, and examples where nature bases solution e.g. are compared to present policy etc. Support knowledge sharing and e.g. cofunding of innovative projects.